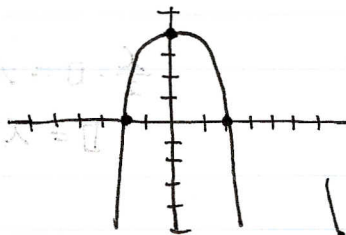


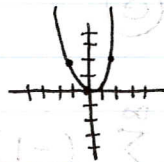
# CH6 TEST

#1.  $y = -x^2 + 4$



$\Rightarrow$  (a)

#2.  $y = 2x^2$   $[-1, 1]$



$\Rightarrow$  (a)

#3.  $\int \left( \frac{e^x}{4 + e^{2x}} \right) = \frac{\tan^{-1} \left( \frac{e^x}{2} \right)}{2} \Rightarrow$  (e)

#4.  $\int \frac{4}{\sqrt{x}} dx = 4 \cdot (x)^{-\frac{1}{2}} = 4x^{-\frac{1}{2}} = 8x^{\frac{1}{2}} = 8\sqrt{x} \Rightarrow$  (a)

#5.  $\frac{1}{\sin^2(2x)} = \frac{1}{\sin(2x)^2} = -\frac{1}{2 \tan(2x)} = -\frac{1}{2} \cot(2x) \Rightarrow$  (c)

#6.  $\int \frac{1-3y}{\sqrt{2y-3y^2}} dy = \sqrt{2-3y} \sqrt{y} = \sqrt{2y-3y^2} \Rightarrow$  (e)

#7.  $\int \sec^{\frac{3}{2}} x \tan x dx \rightarrow$  (e)

#8.  $\int \frac{\sin 2x}{1 - \cos 2x} dx = \frac{\log(1 - \cos(2x))}{2} \Rightarrow$  (e)

#9.  $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx = 2e^{\sqrt{x}} \Rightarrow$  (d)

#10.  $\int \frac{x}{(2x^2+1)^3} dx = -\frac{1}{32x^4+32x^2+8} = -\frac{1}{8(4x^4+4x^2+1)} = -\frac{1}{8(2x^2+1)^2} \Rightarrow$  (b)

#11.  $\int \frac{3x dx}{\sqrt[3]{3-7x^2}} = -\frac{9(3-7x^2)^{\frac{2}{3}}}{28} \Rightarrow$  (e)

#12.  $\int_0^{\pi} (\sin 2x \cos 2x) dx = -\frac{\cos^2(2x)}{4} = -\frac{\cos(2\pi)^2}{4} + \frac{\cos(0)^2}{4}$   
 $= -\frac{1}{4} + \frac{1}{4} = 0 \Rightarrow$  (a)

#13.  $\int_0^1 x e^{-x} dx = -(x+1)e^{-x} = -(1+1)e^{-1} + (0+1)e^{-0}$   
 $= -2e^{-1} + 1 = 1 - 2e^{-1} \Rightarrow$  (c)

#14.  $\int_2^4 \frac{1 - (\frac{x}{2})^2}{x} dx$  /  $u = \frac{x}{2}$

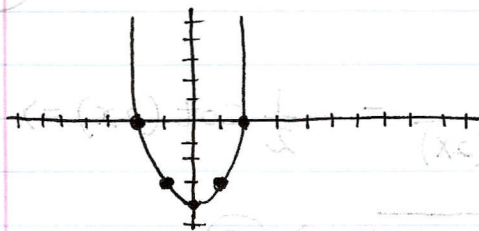
$\frac{x}{2} \cdot 2 = x$

$u = x \times \frac{2}{x} = 2$

$\int_2^4 \frac{1-u^2}{2u} du \Rightarrow \textcircled{e}$

#15.  $1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \frac{1}{5} \dots \sum_{n=1}^{\infty} (-1)^{n+1} \frac{1}{n} \Rightarrow \textcircled{d}$

#16.  $y = x^2 - 4$ ,  $[-4, 0]$



$\int_{-4}^0 (x^2 - 4) dx = \left[ \frac{1}{3}x^3 - 4x \right]_{-4}^0$

$\frac{1}{3}(0)^3 - 4(0) \Rightarrow \frac{1}{3}$

$\frac{1}{3}(-4)^3 - 4(-4) = \frac{1}{3}(-64) + 16$

$\hookrightarrow -\frac{64}{3} + \frac{48}{3} = -\frac{16}{3}$

$\frac{1}{3} + \frac{16}{3} = \frac{17}{3} \Rightarrow \textcircled{a}$

#17.  $v(t) = \cos t$ ;  $[\frac{\pi}{2}, \frac{3\pi}{2}]$

displacement =  $\sin t$ .

$\sin(\frac{3\pi}{2}) - \sin(\frac{\pi}{2}) = -1 - 1 = -2 \Rightarrow \textcircled{c}$

#18.  $V'(t) = \frac{1}{4}t^4 - t^2$   $t^2(\frac{1}{4}t^2 - 1) \Rightarrow t^2(\frac{1}{2}t - 1)(\frac{1}{2}t + 1)$

$0, 2, -2$

$\frac{1}{4} - 1 = -\frac{3}{4} \Rightarrow \textcircled{c}$

#19.  $\textcircled{c}$

#20.  $\textcircled{b}$